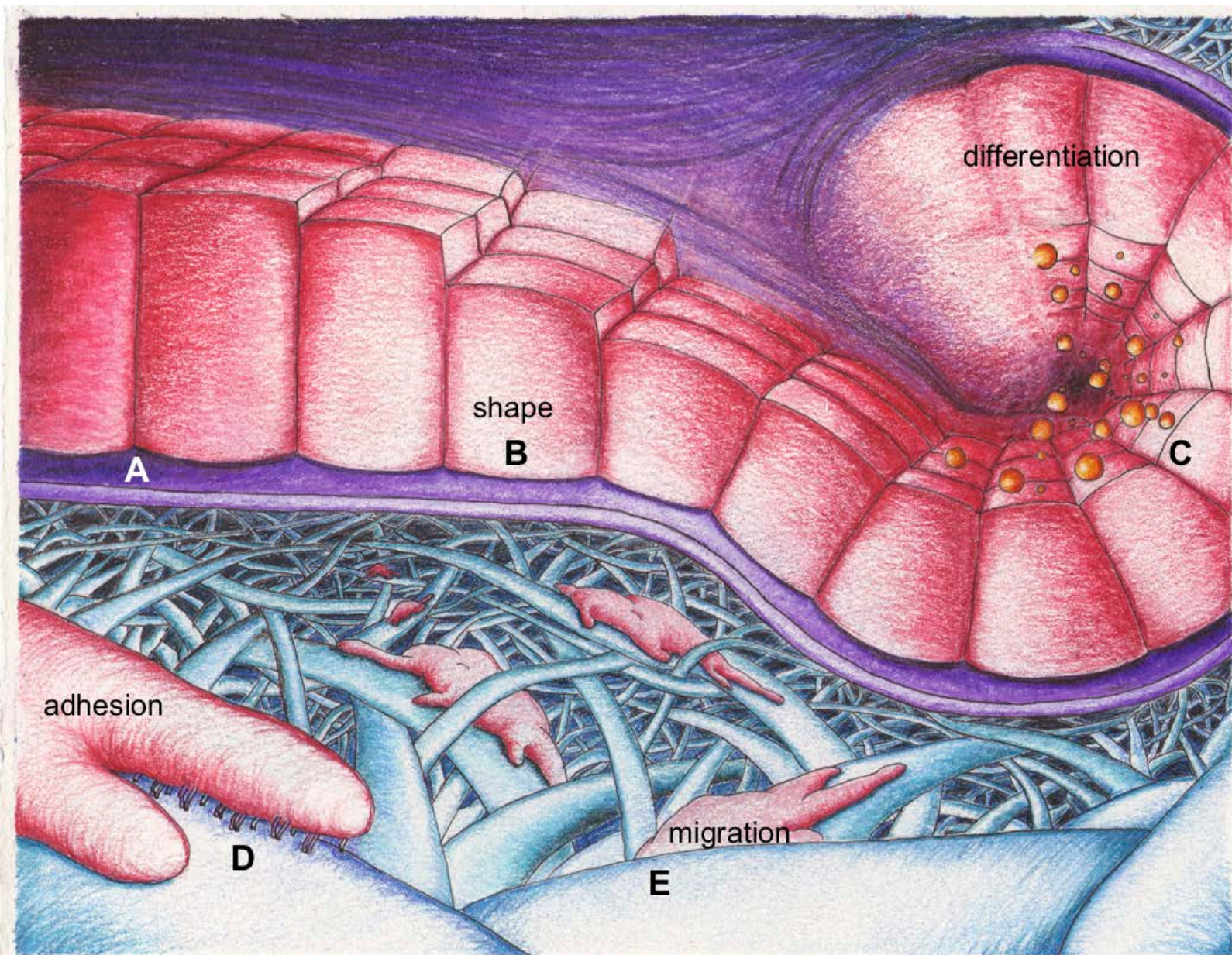


The Official Newsletter of the NIH Graduate Student Community



The extracellular matrix as a master mechanical regulator in development
David A Cruz Walma (NIDCR, University of Oxford)

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Upcoming OITE Events

Discussions for Building Resilience: Processing Loss & Transition

ONLINE
 May 11 1:00-2:00 pm
 May 18 1:00-2:00 pm

Discussions for Building Resilience: Trainees of Color

ONLINE
 May 11 11:00-12:00 pm
 May 25 11:00-12:00 pm

Mindfulness Meditation: Resting in Being

ONLINE
 May 11 5:00-5:30 pm

Discussions for Building Resilience: Dealing with Application Stress & Disappointments

ONLINE
 May 12 3:00-4:00 pm

Discussions for Building Resilience: Navigating Life While Dealing with Anxiety, Depression, & Other Emotional Challenges

ONLINE
 May 12 1:45-2:45 pm

MOM-DAD-DOCS Lunch Meeting

ONLINE
 May 12 1:00-2:00 pm

Discussions for Building Resilience: Managing Additive Habits

ONLINE
 May 15 10:00-11:00 am
 May 22 10:00-11:00 am
 May 29 10:00-11:00 am

Discussions for Building Resilience: Anxiety & Depression

ONLINE
 May 18 11:00-12:00 pm

Industry Careers in MD

ONLINE
 May 12 4:00-5:00 pm

Med School Personal Statements Q&A

ONLINE
 May 13 2:00-3:00 pm

Wellness Wednesday: Using Our Brains to Find Peace in a Crisis

ONLINE
 May 13 12:00-1:00 pm

Sharpening Your Mentoring Skills

ONLINE
 May 13 2:00-4:00 pm

Sharpening Your Mentoring Skills

ONLINE
 May 13 2:00-4:00 pm

Workplace Dynamics I and II: Gaining Self-Awareness and Communication Skills

ONLINE
 May 15 12:00-1:30 pm

Fellows of All Abilities Lunch

ONLINE
 May 15 12:00-1:00 pm

Writers Support Group

Mondays 10:30-11:30 am

+ Daily Check-in 10:30-

10:45 am

New topics each week!

Job Search Work Team

May 20- June 10

Every Wed

3:00-4:00 pm

Follow us on
social media!



[instagram.com/graduate_student_underground](https://www.instagram.com/graduate_student_underground)



[facebook.com/groups/GSCunderground](https://www.facebook.com/groups/GSCunderground)



[linkedin.com/groups/12314339/](https://www.linkedin.com/groups/12314339/)

Search for: NIH Graduate Partnerships Program - Current Students & Alumni



app.slack.com/client/T010UAXBK5H/C0115QW10HW

Register at <https://www.training.nih.gov/events/upcoming>

The Art of Science Competition



Thanks to everyone that submitted an image to the second annual Art of Science competition! Like the previous year, the competition was successful. The interaction between science and beauty is a complicated one that can manifest itself in many areas, from imaging to data to illustrations of our work. Here, we sought to capture those interactions as seen by the graduate student community at the NIH. We had a total of 10 submissions this year. Congratulations to our winners!

The winning submission, as seen on the cover of this issue:

Title: The extracellular matrix as a master mechanical regulator in development

Name: David A Cruz Walma

Advisor: Kenneth Yamada, MD, PhD

Institution and School: NIDCR; University of Oxford

Description: The extracellular matrix (ECM) helps to direct cell and tissue shape during morphogenesis in development by influencing cell adhesion, morphology, migration, and differentiation. (A) Basement membrane underlying epithelial cells completing columnar-to-cuboidal transitions and differentiating into secretory cells. (B) Cells undergoing shape change. (C) Cell differentiation and secretions. (D) Cell-ECM adhesion, with cell adhesion complexes between the cell and a fibril substrate. (E) One of many interstitial ECM fibers.

Second-place:

Title: Pareidolia

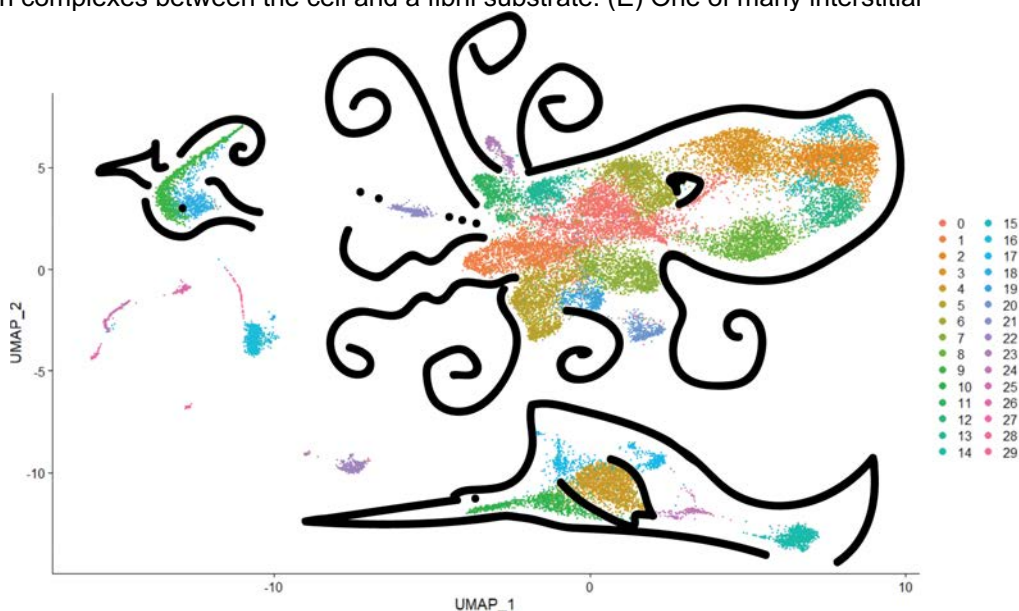
Seascape

Name: Kat Daly & Ruchi Komal

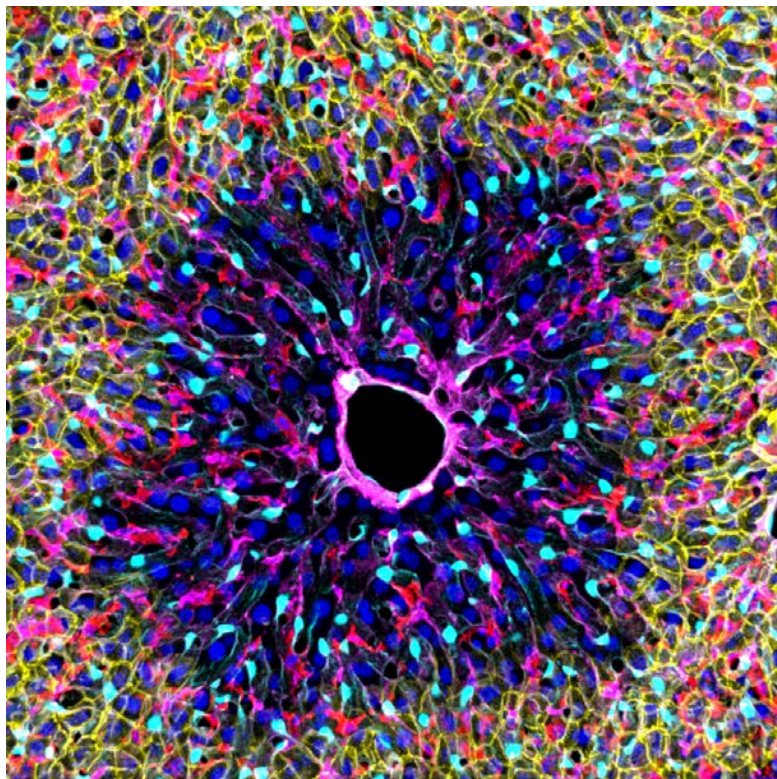
Advisor: Samer Hattar

Institution and school: NIMH; Johns Hopkins

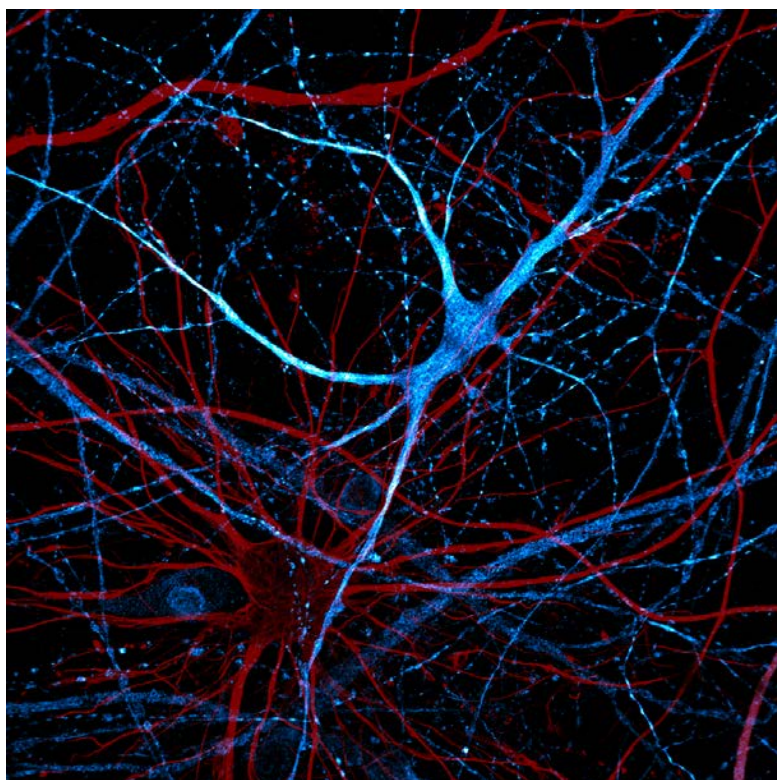
Description: TSNE and UMAP plots are commonly used to visualize dimensionally large data such as the gene expression profiles of individual cells after single cell RNA sequencing. In this



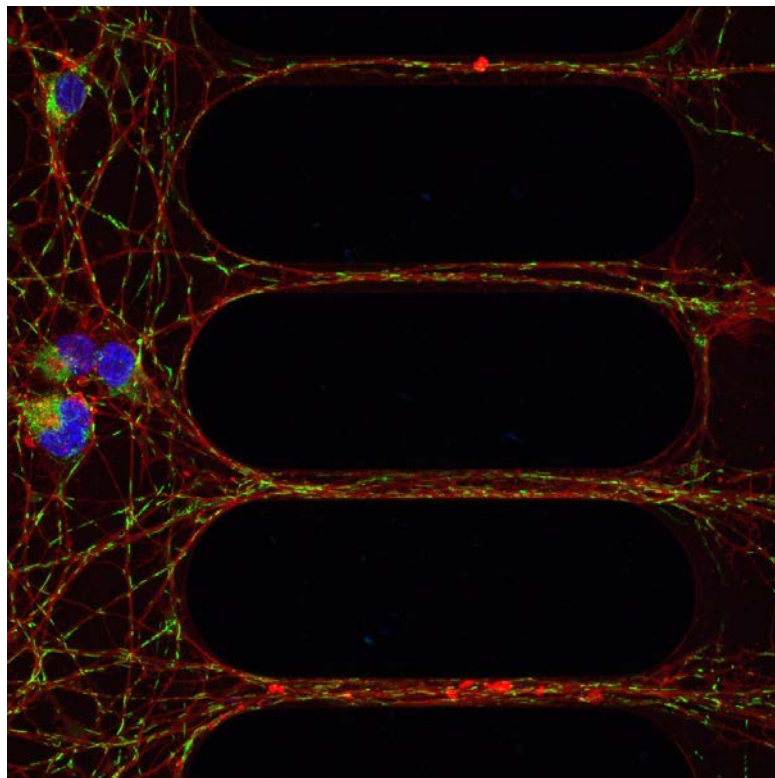
plot, every point represents one cell and is plotted on a field of dimensionally reduced transcriptional space. This UMAP plot is composed of nuclei from a mouse brain preparation that has been clustered into transcriptionally similar groups using unsupervised principle component analysis (PCA). Describing the important information contained within these plots during meetings can be challenging, so, like perceiving figures in fluffy clouds, we sometimes assign imaginary identities to our data to communicate our science more effectively. (*Squid: A large population of heterogenous neurons. Swordfish: astrocytes and tanycytes (in the tail). Seahorse: a general population of oligodendrocytes.*)



Title: Natures' Hexagons
Name: Anita Gola
Advisor: Ronald N Germain
Institution and school: NIAID; University of Oxford
Description: The liver lobule is an exquisite hexagonal structure allowing the organ to spatially segregate and perform a multitude of functions. Here depicted is an immunofluorescence confocal image of a lobule highlighting peri-portal regions with E-cadherin (yellow) and F4/80⁺ Kupffer cells (red), the tissue resident macrophages of the liver. Liver Sinusoidal Endothelial cells can be seen joining up around the central vein thanks to their Laminin (pink) staining and tdTomato (cyan) expression using iCdh5-Cre models. Lastly, DAPI (blue) reveals the location of all nuclei in the liver parenchyma.



Title: Teamwork
Name: Elliot Glotfelty
Advisor: Nigel Greig
Institution/School: NIA; Karolinska Institute
Description: Astrocyte and human stem cell neuron in co-culture.



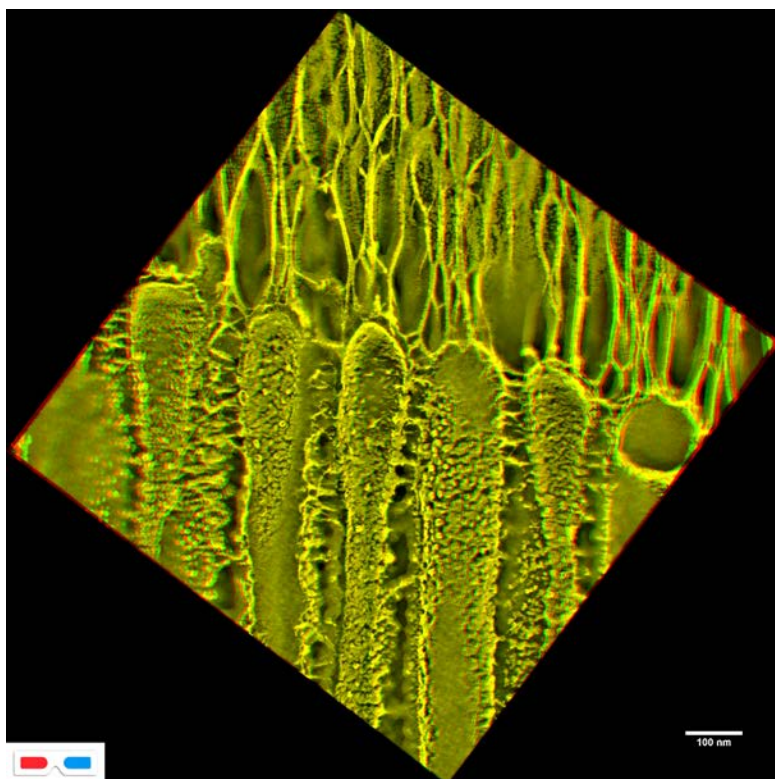
Title: None.

Name: Naemeh Pourshafie

Advisor: Kenneth H Fishbeck

Institution and school: NINDS; GWU

Description: Mitochondrial staining in the neurites and soma of iPSC-derived motor neurons; MitoTracker (green), Cell Mask (red), DAPI (blue).



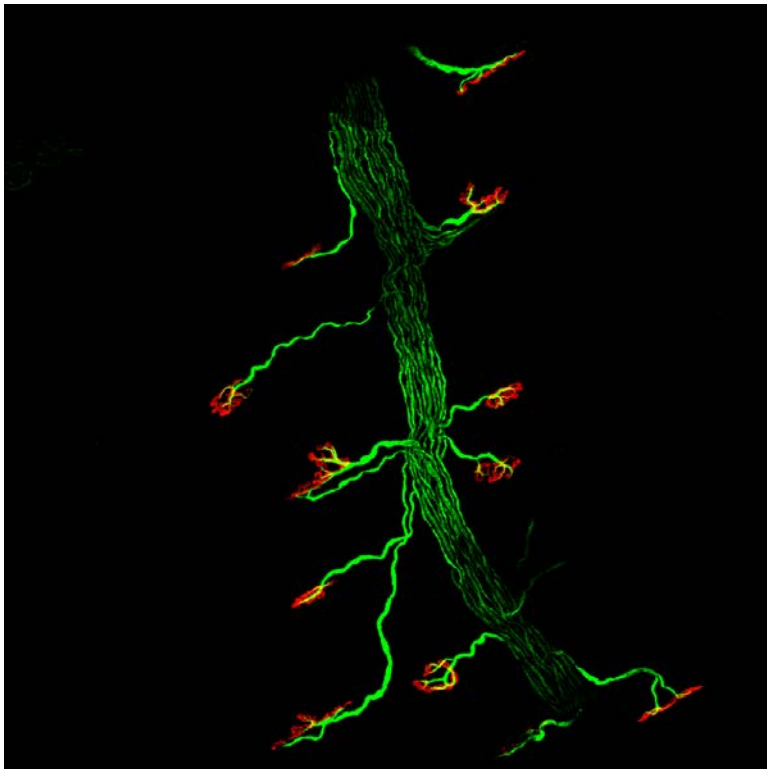
Title: Nanoarchitecture of enteric glycocalyx (bottom image)

Name: Willy W Sun

Advisor: Bechara Kachar

Institution/School: NIDCD; University of Maryland, College Park

Description: The lumen-facing enteric glycocalyx is located at the apical surface of enterocytes and is composed of heavily glycosylated filamentous transmembrane proteins. This pericellular organization has long been hypothesized to act as a protective diffusion barrier, but how glycoproteins are structured to achieve this function remains unclear. To understand the structure-function relationship of enteric glycocalyx, we combined cryogenic sample preparation, freeze-fracture/freezing-etching and electron tomography to elucidate its ultrastructure. Our approaches yielded unprecedented visualization of the enteric glycocalyx nanoarchitecture in near-native hydrated state. This stereoscopic image highlights two novel discoveries: 1) visualization of individual glycoprotein that make up the glycocalyx and 2) the presence of complex filament-filament interactions that result in a dense 3-dimensional pericellular matrix. These findings suggest that the tightly knit enteric glycocalyx meshwork serves as a size-exclusion diffusion barrier that physically shields the enterocytes from injurious materials in the intestinal lumen.



Title: Reaching Out
Name: Elliot Glotfelty
Advisor: Nigel Greig
Institution and school: NIA; Karolinska Institute
Description: Diaphragm phrenic nerve branches terminating at the neuromuscular junction

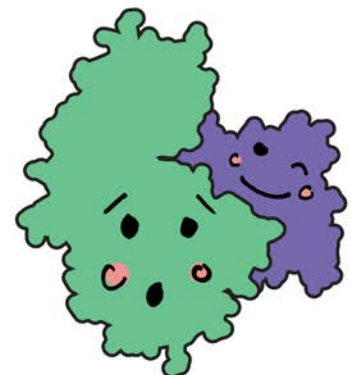
Title: Happy PPI (below)
Name: Michael Chambers
Advisor: Meru Sadhu
Institution/School: NIHGRI; Georgetown University
Description: I'm using plasmids to express mutated proteins in yeast to see what effect these mutations have on the protein-protein interaction (PPI).



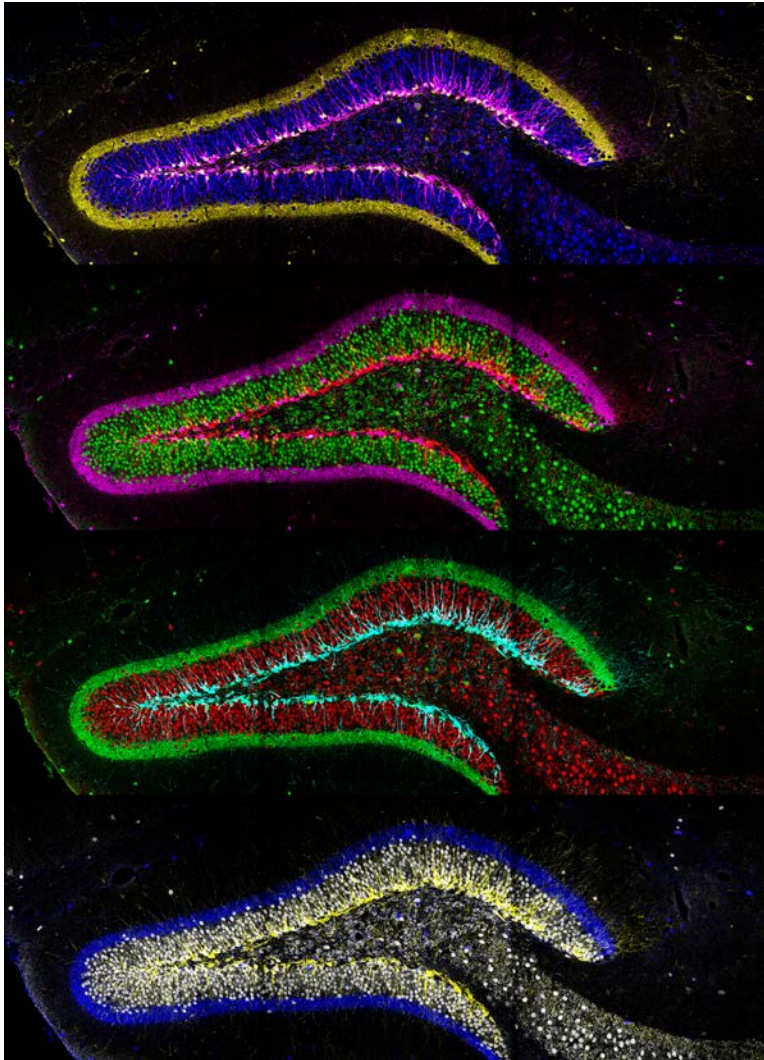
(happy plasmid)



(happy yeast)



(happy PPI)



Title: Déjà vu

Name: Elliot Glotfelty

Advisor: Nigel Greig

Institution/School: NIA; Karolinska Institute

Description: Dentate gyrus of the mouse hippocampus pseudo-colored and stacked. The hippocampus is a brain region heavily involved in memory formation. The dentate gyrus (pictured) resides in the hippocampus and is where new neurons are formed. Here several cell types are shown, including interneurons (stained with calretinin), mature neurons (stained with NeuN), and neuronal precursor cells (stained with DCX).

NIH Scientists Lead the Development of a Vaccine for COVID-19

There is a lot of uncertainty during these unprecedented times. However, hardworking teams of scientists at the NIH are working around the clock to bring a safe, effective vaccine to the public. We were pleased to interview two of the amazing scientists behind the research - **Dr. Kizzmekia Corbett** is a senior research fellow in Dr. Barney Graham's laboratory at the Vaccine Research Center and leads the Coronaviruses Vaccine & Immunopathogenesis Team, and **Olubukola Abiona** is a post-bac working with Dr. Corbett on coronavirus research for almost 3 years. Guided by previous research on other coronaviruses, Dr. Corbett and her team were able to make key stabilizing mutations to the SARS-CoV-2 spike protein within a day of the sequence being released, and advance the product (in the form of an mRNA vaccine) into phase I clinical trials in less than two months.



Dr. Kizzmekia Corbett

Senior Research Fellow, Coronavirus Scientific Lead

When did you start working on coronaviruses (CoVs), and why did you choose to study them?

I started working on CoVs in 2014 when I joined the NIH NIAID Virus Research Center as a research fellow. My interests in CoVs were multi-fold: (1) The VRC has recently published vaccines for MERS and SARS which were largely DNA-based approaches, and it was clear that there was work that needed to be done to make better CoV vaccines particularly as CoVs were poised for pandemic potential. (2) Coming from the dengue virus field, I wanted to switch into a different field into my "home terf" of

respiratory viruses. Additionally, I wanted to solidify a niche in research where viral immunology expertise, such as what I gathered getting my PhD, would be useful for propelling novel vaccine concepts.

What is the VRC's role in this vaccine trial? What other CoV-related response efforts is the VRC involved with?

The VRC, and our collaborators at UT Austin, facilitated the sequence of the spike construct used in "mRNA-1273". Additionally, together with DMID and Moderna, the VRC helped to initiate a phase 1 clinical trial, which is now enrolling at multiple sites. Much of what we do at the VRC for this vaccine development process is non-clinical or "pre-clinical", which means we design and execute experiments to answer basic questions about the vaccine's ability to elicit immune responses in animal models.

What are the advantages to using an mRNA-based vaccine platform?

mRNA vaccines are known for Th1-type immune responses, which may be important for a SARS-CoV-2 vaccine. Additionally, mRNA can be manufactured fairly quickly and thus is

usable in pandemic response efforts more so than for example inactivated whole virus or subunit proteins.

Are there any concerns with mutation rates for SARS-CoV-2?

The current mutation rate for SARS-CoV-2, particularly in the spike protein region, are fairly dismal. There is no concern about this, as the vaccine we are using incorporates the entire spike protein and immune responses should be targeted to regions that are less mutation-prone.

Do you anticipate SARS-CoV-2 being a seasonal virus, and do you think that the people infected will develop lifelong immunity?

There is precedence for pandemic viruses, such as the 1918 flu, to embed into human populations and have resurgences for more than one season. I think we would need to wait to see what SARS-CoV-2 does, but my inclination would say that history could possibly repeat itself in that way.

What are the future plans for coronavirus research?

So much. We are interested in understanding more about coronavirus immunopathology to inform not only mRNA-1273 but other SARS-CoV-2 vaccine platforms, isolate and characterize monoclonal antibodies that could be used as therapeutics, and lastly as we look ahead to the future, start to ignite some pan-CoV or “universal” vaccine concepts.



Olubukola Abiona

Post-baccalaureate IRTA Trainee

When did you start working on coronaviruses, and why did you choose to study them?

I started working on coronaviruses in August 2017 when I joined the lab of Dr. Barney Graham as a post-baccalaureate research fellow. After graduating from UMBC, I was interested in studying basic science with more directly translatable elements which led me to the VRC. I was drawn to coronavirus research after learning about the SARS-CoV and MERS-CoV outbreaks in 2002 and 2013, respectively, in my college biomedical chemistry. Their wide tropism amazed me and so

when I started under Dr. Corbett, I was excited to learn more about incorporating my previous knowledge and focusing it in the context of viral pathogenesis and vaccine design.

How many types of coronavirus strains are circulating in humans?

There are 7 strains circulating in humans. The four endemic strains 229E, OC43, HKU1, NL63 cause mild symptoms and make up roughly 20-30% of the common cold, while the remaining 3 MERS, SARS, and SARS-CoV-2, the virus which causes COVID-19, are categorized as pandemic or epidemic.

What makes SARS-CoV-2 so highly transmissible?

The spike glycoprotein of SARS-CoV-2 contains a cleavage site that interacts with an enzyme known as furin. We know this furin-like cleavage site is present in SARS-CoV-2 but not in its cousin SARS-CoV or other coronaviruses. The current thought is because furin is so widely distributed in the body, that it is contributing to the high transmissibility that we see with SARS-CoV-2, but not with other CoV epidemic strains.

Why is the spike protein important for coronavirus vaccine development?

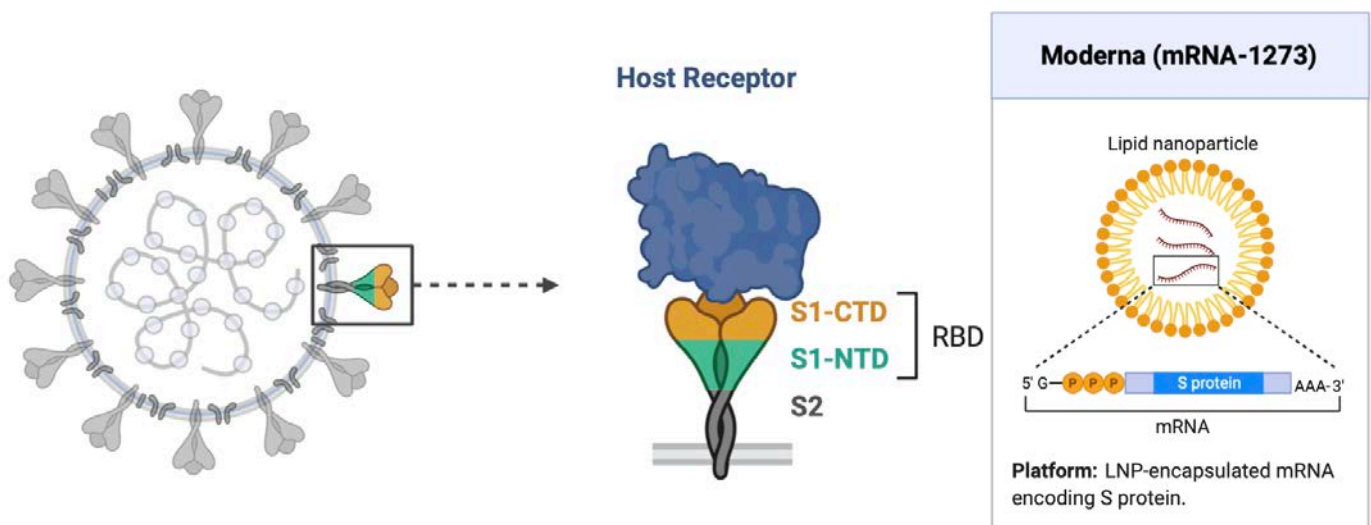
Vaccine design relies heavily on stopping an infection before it begins, if possible. Coronaviruses use the spike glycoprotein to enter host cells and begin an infection. By creating a spike-centric vaccine design, you can focus on generating neutralizing antibodies that prevent entry. This is why the spike is an attractive target in current coronavirus vaccine efforts.

Can you describe the VRC's current vaccine candidate, and how the trial is set up?

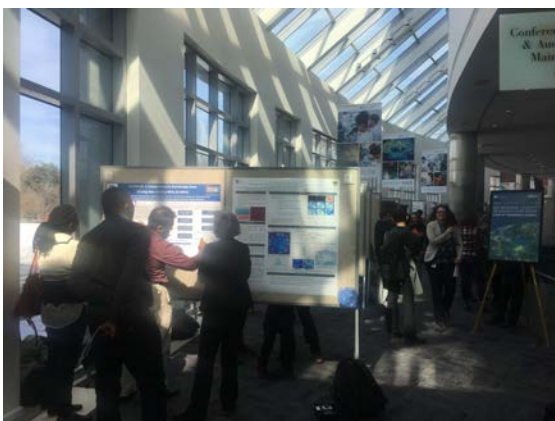
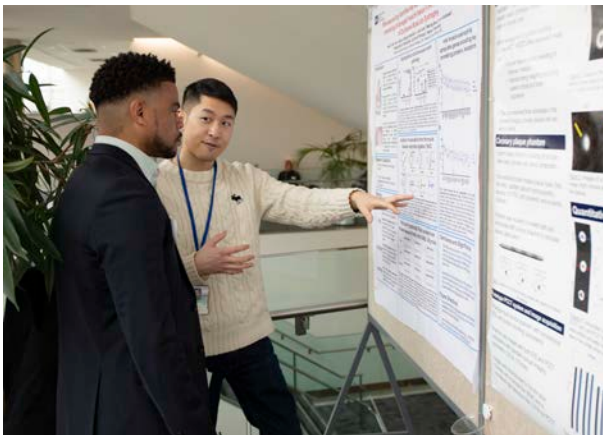
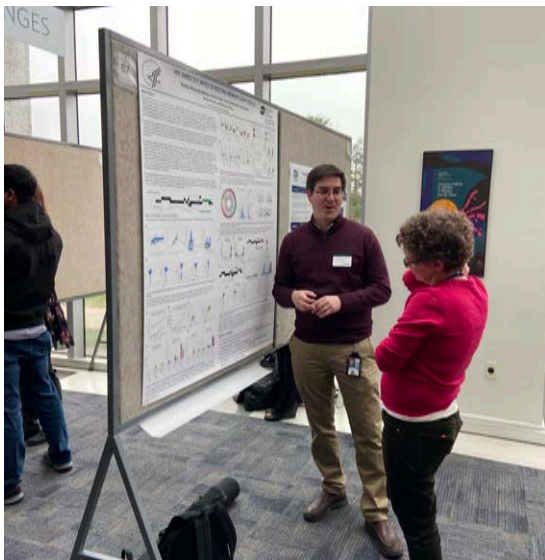
The VRC design in conjunction with Moderna is an mRNA-delivery based vaccine that is the SARS-CoV-2 spike stabilized in its prefusion conformation. Before interacting with the host, the spike is in a metastable prefusion conformation. Once it binds to its receptor ACE2 and begins to fuse with its target cell, it switches to an irreversible post-fusion state. We know from previous studies from our lab on Coronaviruses and Respiratory Syncytial Virus (RSV) that antibodies elicited against the pre-fusion state of the spike produce a more potent and robust immune response. In regard to the trial, we are currently in Phase I human clinical trial testing, while concurrently continuing research studies that will allow us to move forward into Phase II and Phase III. The current timeline for distribution has us at 18 months from the beginning of making our vaccine construct in early January 2020.

The mRNA-1273 vaccine was made in a record time. How did your prior research contribute to such a rapid development of the current vaccine candidate?

Since an early age, my mother has always quoted "prevention is better than a cure". This phrase aptly describes the NIAID Vaccine Research Center and the Coronaviruses Vaccine & Immunopathogenesis Team efforts to lead pandemic preparedness in the context of coronaviruses. This effort was largely spearheaded by scientific lead and my mentor Dr. Kizzmekia Corbett since her arrival at the NIH 5-6 years ago. Studying other CoV strains for the last half-decade allowed our team to quickly assess the best vaccine candidate and work with Moderna to move it in clinical trials 66 days after the sequence was first released.



16th Annual Graduate Student Research Symposium Recap



The 16th Annual Graduate Student Symposium took place on February 20th, 2020. The hallways in Natcher came to life with an electrifying energy as graduate students gathered to learn about the diverse research projects conducted across the NIH campuses. The symposium kicked off with the Annual Elevator Pitch Competition, where over 60 graduate students gave a concise overview of their research projects in two minutes or less. This year, Olive Jung (NIH/OxCam) won the Elevator Pitch Competition.

The elevator pitch was followed by our Keynote speaker. Dr. Todd Kashdan is a Professor of Psychology and Senior Scientist at the Center for the Advancement of Well-Being at George Mason University. He has authored numerous books on the psychology of success, and is well-renowned on his talks covering well-being, strengths, social relationships, stress, and anxiety. His talk encompassed several key issues that are important to discuss in the graduate student community, such as depression and developing resilience as a scientist.

This year, over 140 students presented posters and four students: Dennis Burke, Sara Mithani, Simona Patange, and Meg Goswami were selected to give short talks. The diverse scientific topics covered in both the poster presentations and each of the talks highlight the extremely robust scientific research conducted by graduate students across all the different NIH campuses.

The symposium concluded with the presentation of the Outstanding Mentor Awards, the Graduation Ceremony, and the NIH Graduate Student Research Awards (NGRSAs). From the short speeches delivered by the graduate students and their mentors, it is evident that mentoring is a two-way street. It was inspiring to witness the strong bonds that were fostered through mutual respect between both parties. Shining a spotlight on our graduating class of 2020 and recognizing the outstanding science from the poster presentations with the NGRSAs highlights the success graduate students have had at the NIH.

Every year, the Annual Graduate Student Research Symposium is a celebration of science and community. It allows us to take a glimpse into all of the diverse research projects taking place across all of the different NIH campuses. The elevator pitches and poster presentations push us to think about effective ways to communicate science by learning how to deliver the message of our research in both non-traditional and traditional ways. The Graduate Student Research Symposium strengthens the graduate student community through our enthusiasm for advancing scientific knowledge, and it embodies the excellence of scientific research conducted by graduate students from all different institutes and centers at the NIH.

16th Annual Graduate Student Research Symposium Awards



Elevator Pitch Competition:

First Place: Olive Jung (NCATS)

Second Place: Bevin Blake (NIEHS)

Finalists:

Maria Vega Sendino (NCI)

Marya Sabir (NINDS)

Amelia Foss (NCI)

Katherine Masih (NCI)

Grace Taumoefolau (NIAAA)

Keyla Tumas (NIAID)

Thuan Nguyen (NIAID)

Michael Chambers (NHGRI)

Siddharth Roy (NCI)

NIH Graduate Student Research Awards:

Behavioral Sciences/Psychology/Neuroscience

Troy Dildine

Hunter Schone

*Biochemistry/Developmental/Cell & Molecular
Biology*

Subreen Khatib

Ferda Tekin Turhan

Bioinformatics/Biostatistics/Epidemiology/Computational & Systems Biology

Allison Meadows

Structural Biology/Biophysics/Chemistry

Kathryn Diederichs

Immunology/Virology/Microbiology

Charles Coomer

Chad Hogan

New Proposal

Melissa Arroyo-Mendoza

Jiajia Pan

*Pharmacology and Clinical and Translational
Science*

Delia Sass

**Thank you to everyone who
participated in this year's
Research Symposium!**

Recent Graduates:

Where are they now?

The PhD is no easy task: grueling hours, stress to the max, crazy roller coaster rides with experiments and much more. No matter how you feel through your PhD, there unfortunately is another giant step afterwards of then finding your career. For some, they know what career path they want before starting their PhD and are able to move easily up the ladder to that job. For others, this often is another arduous task to tackle and new experiences change your career ambitions. Wherever you are in your PhD and no matter your desired career path, it's not a bad idea to take some time to think about your future.

We are very fortunate as NIH Graduate Partnership Program students to have tremendous resources regarding careers and steps to get there. The Office of Intramural Training & Education hosts various preparatory skill sessions and workshops to boost your CV/Resume, tips on job search, discussing your salary, and much more. See more details on upcoming events on their website: <https://www.training.nih.gov/home>. Individual institutes also have their own training directives and workshops, so be sure to check those out. The Graduate Student Council continuously hosts multiple speakers from different career paths through their series "PhDs in the Real World" and "Academic Journeys and Building Networks," so be sure to tune into those upcoming events!

Another fantastic resource is to utilize your fellow peers. The alumni database can be a great tool to take a look at where NIH GPPers have ended up in their career paths or build your network. Please feel free to check out the database at: <https://www.training.nih.gov/alumni>. Also, if you graduate, be sure to add your name to the list to help future graduate students!

We asked some of the more recent graduates (graduated 2019 & 2020) to see where their paths have taken them next and to provide a little advice they wish they would have followed! Maybe it'll be inspiring, helpful or provide a little light on the next step on your career journey. No matter where life leads you, we wish you all the best of luck!



Vincenzo Mercucio

Title of dissertation: HIV-1 infected human lymphoid tissue remains immune-activated despite ART: soluble and extracellular vesicle-associated cytokines

What year did you graduate and what program at your university was your degree from? Molecular and Translational Medicine doctoral program at University of Milan in Italy (Spring 2020)

What have you been doing since receiving your PhD? I recently received my PhD and was initially planning on pursuing my career back in Italy. However, after the coronavirus situation, a lot of things changed. I am currently a postdoc at NIH in my same PhD lab (Dr. Margolis's lab) at the NICHD department in Bethesda, where I work on infectious diseases and extracellular vesicles. Specifically, I investigate HIV-1 persistent immune activation despite antiretroviral treatment. I am also involved in new synthetic heterodimers drug against both HIV-1 and CMV.

What are your future career goals? I would like to become a P.I. and have my own lab, but I am also interested in clinical trial studies and decided to start an online training on this topic. I would like to keep my options open and eventually to be able to switch one day. I am still figuring out what is the best path for me and currently considering positions such as Clinical Research Associate or Medical Science Liaison.

What is your best advice for other GPP students searching for a job? Job searching is a job itself, you have to be patient and I suggest starting in advance (at least 6 months ahead of your dissertation). You really need to plan, organize and spend time on that. Talk with people more expert than you and ask for suggestions, especially how to write a CV or a cover letter and of course how to manage the interviews. Do not be afraid in sending your resume, always try and never give up!



Brendan Miller

Title of dissertation: Investigation of Blood-based Biomarkers and Patterns of DNA Methylation in Tumors

What year did you graduate and what program at your university was your degree from? Cellular, Molecular, Developmental Biology and Biophysics Department at Johns Hopkins University (2020)

What have you been doing since receiving your PhD? I am being transitioned into a temporary post-doc position in my current lab and working my thesis aims into manuscripts for submission. In addition, I am spending time prepping for my new post-doctoral position with Dr. Jean Fan in the

Biomedical Engineering Department at Hopkins by strengthening my knowledge of a variety of different statistical concepts and writing code in Python and R. The new position will involve developing computational tools to analyze different types of single cell data. This will be in the context of pediatric brain cancers and potentially endometrial cancer as well.

What are your future career goals? My ideal, long-term goal is to lead a research team in some capacity, whether that is in an academic, industry, or government setting. I am really interested in transitioning towards bioinformatics. I want my scientific contribution to be able to empower the scientific community and be able to foster the next generation of scientists. If my work can have a meaningful effect by improving the well-being of just one person, I'll be satisfied.

What is your best advice for other GPP students searching for a job? Everyone talks about the importance of networking, but truthfully I found this position by seeing Jean's post on Twitter. So, take advantage of all the resources at your disposal. And there are a lot of post-doc positions posted on science twitter! Also, don't be afraid to inquire or apply for positions for which you might feel under-qualified. In my case, I felt a little intimidated by the prospect of joining a purely computational lab given my traditional training as a wet lab biologist. But I made it clear that this was something I was excited about pursuing. I also had some foundational skills in computational biology that were self-taught. While I wasn't trained in an official capacity, I had evidence demonstrating my ability to learn new skills on the fly and then apply them to solve a problem at hand, which is honestly a PhD in a nut-shell. Apply for what excites you or what you want to do, not what you think you are necessarily "qualified" to do.

What are you most excited for or enjoy the most at your next/current position? I'm excited to apply my foundational training as a wet lab biologist towards working with our collaborators to generate my own data, too.



Pablo Vidal-Ribas Belil

Title of dissertation: Trajectories, cognitive mechanisms, and treatment response of irritability in children and adolescents (Awarded 2019 King's College Outstanding PhD Thesis Prize)

What year did you graduate and what program at your university was your degree from? Child and Adolescent Psychiatry, at the Institute of Psychiatry, Psychology and Neuroscience at King's College London (United Kingdom).

What have you been doing since receiving your PhD? I am currently a Postdoc at the Social and Behavioral Science Branch, Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), NIH, under the supervision of Dr Stephen E. Gilman. My current project focuses on examining early life risk factors (including prenatal and perinatal factors) of suicide mortality in a cohort study, the National Collaborative Perinatal Project cohort.

What are your future career goals? (Still figuring it out 😊)

What is your best advice for other GPP students searching for a job? Networking and having a good network to look out for job opportunities (eg. Having twitter helps!).

What are you most excited for or enjoy the most at your next/current position? I always look forward to learning new skills – a position that requires ALL the skills you already have won't provide you much development. It has to be challenging.



Patricia Sikorski

Title of dissertation: Regulation of the complement system by *Toxoplasma gondii* surface coat proteins SRS25, SRS29C, and SRS57

What year did you graduate and what program at your university was your degree from? Microbiology and Immunology program at Georgetown University (Aug 2019)

What have you been doing since receiving your PhD? In January 2020, I started a postdoctoral scientist position at the George Washington University. In my new position, my research will focus on identifying new biomarkers and developing therapeutics for the autoimmune disease myasthenia gravis.

What are your future career goals? I am on an academic career path.

What is your best advice for other GPP students searching for a job? Writing your thesis and defending doesn't leave you much time for much else, let alone job hunting, so have a clear idea of what position you want and what your future goals are before you start writing. Don't be afraid to reach out to labs you are interested in to see if they have any openings in their lab.



Albert Sek

Title of dissertation: Eosinophils in Muscular Dystrophy: Key Characteristics and Contributions to Disease

What year did you graduate and what program at your university was your degree from? University of California, Los Angeles (UCLA); Molecular, Cellular & Integrative Physiology PhD Program (Spring 2020)

What have you been doing since receiving your PhD? Postdoc, Laboratory of Allergic Diseases, NIAID. Continuation of my doctoral research examining the role of eosinophils in muscular dystrophy



Stephanie Miller

Title of dissertation: The stability and scaling of neuronal avalanches and their relationship to neuronal oscillations.

What year did you graduate and what program at your university was your degree from? Biophysics at the University of Maryland College Park (2019)

What have you been doing since receiving your PhD? After my defense at UMD College Park, I started out with a brief postdoc position with my NIH PI, Dr. Dietmar Plenz, in order to wrap up my research project. As of March, I now have a postdoc position at the Gladstone Institutes, which is affiliated with the University of California San Francisco. I work in the lab of Dr. Jorge Palop at the Gladstone Institute for Neurological Disease. At Gladstone I'm applying techniques I learned at NIH, like electrophysiology and optogenetics, to study neuronal network dysfunction in a mouse model for Alzheimer's disease. Specifically, we are trying to understand why cortical gamma synchrony is impaired when inhibitory neurons exhibit disease-related action potential deficits.

What are your future career goals? I foresee a career in research, leading a research program that advances scientific frontiers and provides training opportunities to minoritized early-career scientists.

What is your best advice for other GPP students searching for a job? Keep an eye on opportunities forwarded by OITE and your IC's fellowship office. That's how I found my current postdoc position. Getting connected to an interview opportunity made it possible for me to do interviews at UCSF even before I had started a proper job search.

What are you most excited for or enjoy the most at your next/current position? In my current position, I am feeling grateful for the good fortune to have been hired just a week before a hiring freeze caused by the pandemic. I also appreciate that the Gladstone Institutes seems to prioritize postdoc success and wellness. They are doing a great job helping us work to remotely and/or to work in the lab in shifts so that we can safely keep some momentum in our bench work while maintaining social distancing.

I welcome any outreach from current NIH fellows. Near- and peer-mentorship can be a helpful resource for anyone



Nick Sciascia

Title of dissertation: Development of a Novel DNA Break Capture Method to Study the Repair Dynamics of Topoisomerase-DNA Lesions

What year did you graduate and what program at your university was your degree from? George Washington University (Degree Conferred January 2020, Defended August 2019).

What have you been doing since receiving your PhD? Currently looking and most likely will aim for an Industry Postdoc position.

What are your future career goals? I would like to manage or direct a large research division of a major biotech or pharma company (or run a smaller biotech startup).

What is your best advice for other GPP students searching for a job? Just apply to everything you might be interested in (you can always turn things down if you decide they are not for you). Reach out to anyone that might be able to help you out or give you more information to make a better decision.



Lisa Shank

Title of dissertation: Stress, Loss of Control Eating, and Physical Health in Youth

What year did you graduate and what program at your university was your degree from? Uniformed Services University of the Health Sciences (2019)

What have you been doing since receiving your PhD? Assistant Professor of Medicine and Research Scientist of Military Cardiovascular Disease Outcomes Research Program (MiCOR), Metis Foundation at Uniformed Services University of the Health Sciences in Bethesda.

Student Spotlight



Jacob Paiano

Please state your name, GPP program and year in the program. My name's Jacob Paiano, and I'm a fifth year PhD student in the Immunology Graduate Group at University of Pennsylvania. I've been at NIH/NCI for the last three years in the lab of André Nussenzweig studying DNA damage and repair in meiosis and mitosis.

How would you describe your graduate school experience?

Grad school for me has been an incredible period of freedom and growth. It's so easy to fixate on the pressures and expectations, but the reality is that a lot of those pressures are there to guide us, and we have more control than we let ourselves think. For example, I came to grad school wanting to

study immunology. But the more that I learned and explored the science, the more my specific interests came into focus, which led me to joining a lab studying DNA damage in meiosis...definitely not traditional immunology. My mentors have been very supportive and helpful in all my endeavors as well. Surround yourself with lots of support and take some risks.

Is there anything you would have done differently or have changed since you first started? I learned later than I would have liked the value of quality over quantity in my experiments. I would spend too many hours doing too many things in the lab that caused unnecessary mental energy drain. If I could start again, I would approach projects more carefully and figure out what experiments to prioritize to save myself time. You can get a lot more accomplished in a shorter amount of time if you're doing the right things. Talk to your PI, other mentors, people in the lab about your experiments and be honest with yourself about what's most important to get done.

Is there anything you did when lab or experiments were stressing you out? Well first, don't compromise sleep! Get those 7+ hours...you'll be sharper and far more productive if you do. During periods when there's a lot going on, I find the best way to keep my stress levels low is to maintain as much routine as I can. Even if the lab hours are long, I make sure I'm on a consistent sleep, meal, and exercise schedule. Removing as much chaos from my personal life as I can makes the inevitable lab chaos more manageable. A short-term fix if I'm feeling frustrated in the middle of the day is to find a quiet spot somewhere and do some stretching for 10-15 minutes. No crazy yoga or anything, just some basic stretches to physically release the tension. Nice way to recalibrate physically and mentally.

Do you have a favorite spot on campus? When the weather's nice, I like to work at the terrace outside the NIH Library in Building 10. It's a cozy outdoor nook with plenty of tables and shade that I find very peaceful. The gardening and landscaping are actually quite nice, especially later in the summer when everything has fully grown in.

What OITE resources have you used/events attended? The Graduate Student Symposium each year is a fantastic resource to talk about your science and get valuable feedback. I've presented posters for the last three years, and each time I find the experience helpful. You get to present your work to people typically not in your field, which is a fun and important challenge in science communication. And you get lots of diverse perspectives on your work and new ideas to try. I also really enjoyed the 9-week online pedagogy course that OITE offers. The instructor is passionate, and the curriculum is effective. I recommend it to anyone interested in teaching or current state of education as an institution. It was also very practical; I actually helped one of the postdocs in my lab to write a teaching philosophy statement (the main assignment for the class) for their faculty applications.

What did you find was the most difficult thing about transitioning into graduate school at the NIH? What was the easiest? It was probably just a maturity thing, but I found it most difficult not only to take ownership of my science but also take responsibility. By responsibility, I mean admitting when you're wrong, acknowledging your weaknesses, and seeking the right help. Some of grad school can definitely be out of your control, but a lot of your success starts with you. Sometimes you have to admit when you're the reason something isn't working out and then make a change. It's like that moment in *The Devil Wears Prada* when Anne Hathaway's character is at her lowest, feeling overwhelmed and treated unfairly. She wants to be there and do a good job, but she has to admit to herself first that there's honestly more she could be doing to succeed. So she grabs the Chanel boots and puts in the work. Don't get me wrong, I would never condone Miranda Priestly-like PI behavior, but the important thing is that Andy empowers herself to navigate a new challenge that's intimidating and demanding. Which I think we can all relate to coming into grad school. The most fun part of grad school has been the science! The technologies available to us as grad students are extraordinary, especially if you think of what a grad student was limited to 50 or even 20 years ago. The explosion of next-gen sequencing technologies has been especially fun for me to be part of.

What words of wisdom would you give to new students at the NIH? The best advice I received was simply to take advice. Each person has a different journey and perspective, so take the time to hear what they have to share and seek diverse outlooks. You won't necessarily agree with everything, but great advice can be found in unexpected places. I've found it really important to foster mentorships outside of my lab and thesis committee. Some of the best mentoring I've received has come from PIs not in my immediate community, some even at different institutions altogether. People that I connect well with scientifically and personally who have provided unbiased, fresh advice.

What hobbies do you enjoy outside of lab? I took up (apartment balcony) gardening a few summers ago and have since become slightly obsessed with plants. In the winter, I work on my indoor collection. My roommate has been graciously very tolerant of the space

it requires. Luckily plants have become super trendy the last few years, so it's easy to find a community of plant lovers and well stocked nurseries nearby.

Do you have a dream destination to visit or thing to do/learn? I would love to pick up chocolate making. Learning how to use different kinds of cacao beans, experimenting with different styles and flavors, and crafting those super delicate decorations. So I guess full chocolatier? I think it would be a fun blend of science-like analytical precision and creativity. Also it's chocolate, so how could I ever get tired of it?

What is next for you? Currently on the postdoc hunt. I love the intellectual freedom that academia offers, so I plan to stick with it for the foreseeable future. I did feel a little intimidated when I started, since there's no script to follow or formal application process when reaching out to academic labs. It was a surprise to me that many labs want you to contact them up to a year before you defend. That was quite a lot to plan in the middle of me wrapping up a paper and thinking about starting my dissertation writing. But once the ball was rolling, it was a great relief to see a next step coming into focus. I think it's good to start thinking early about what you'd want to work on for your postdoc and make a fully educated decision about the future of that field and the environment you'd do best in.

2019 GSC End of Year Report

As we mark the transition from the 2019 to the 2020 team, we would like to take a moment to reflect on some of the accomplishments of the Graduate Student Council during the past year. Among our proudest accomplishments is the remarkable talent that we have welcomed onto the graduate student council. We are happy to report on the many successes we have achieved in 2019:

To support our efforts in building community, the social committee has provided opportunities for graduate students to coalesce, including monthly rock-climbing sessions, a summer barbeque, a picnic and a lounge-warming party. (These are but a few of the many events; listing all the terrific events in 2019 would take significantly more space!)

To support our efforts in professional development, the mentorship committee has organized a career seminar series (“PhDs in the Real World”) that has featured distinguished speakers such as Sunita Shukla, Associate Director for Regulatory Science at the Food and Drug Administration (FDA); Gilad Kaplan, Project Leader at AstraZeneca; and Michael Ferenczy, Consultant at McKinsey & Company. In addition, the mentorship committee has hosted regular seminars (“Finding Mentors and Building Networks”) to connect graduate students with principal investigators who can offer insights on their academic journey; past speakers include Dr. Joana Vidigal, Dr. Andres Lebensohn, Dr. Naomi Taylor and Dr. Vanja Lazarevic.

To support our efforts to contribute to the community, the community service committee has coordinated volunteers to mentor high school students (Prince George’s County Project Lead the Way); organized blood drives at the NIH Blood Bank; and organized events to volunteer at the Manna Food Bank and Children’s Inn.

In addition to these successful initiatives, we oversaw the launch of several social media platforms designed to connect graduate students. The Instagram account hosts flyers for upcoming events as well as pictures of the latest events organized by graduate students, for graduate students. The LinkedIn Group (NIH Graduate Partnerships Program – Current Students & Alumni) is designed to connect graduate students with one another and with alumni that may be able to help students explore career opportunities.

Given the successful implementation of these key initiatives, as well as the remarkable talent found on the GSC, we believe the state of the Graduate Student Council is strong. We are confident in the ability of this GSC to address the needs of the graduate student community, and we are excited to see what the future holds for this outstanding organization. Finally, we would like to close our term by recognizing that none of these successes – both past and future – would be possible without the tireless effort, creativity and persistence of members of the graduate student council. For this, we are immensely grateful.

Your 2019 GSC Co-Chairs,
Albert Sek and James Stamos

2020 GSC Update



2020 GRADUATE STUDENT COUNCIL

Cochairs (Kat & Katelyn); Secretary (Chad); GS3 Committee (James); Community Service/Outreach/Mentorship Committee (Indira, Heather, Katelyn); Social Committee (Kat & Maddie); Postbac Liaison (John-former; Kendall); OxCam Board Liaison (Jacob); Public Relations Committee (Dana, Jayasai, Emily, Chad, Keyla, Delia, Katelyn); FAES Liaison (Delia); Felcom Liaison (Carla)

Dear Graduate Students,

We are delighted for this opportunity to formally introduce ourselves as the 2020 Graduate Student Council co-chairs. Our mission as the graduate student council is to give the student body a voice and the means to improve the overall graduate experience here at the NIH. Despite the difficult transitions due to the Covid-19 pandemic, we are rising to the challenge and aim to emphasize the importance of our community, even at a distance. First, we'd like to thank the co-chairs of 2019, Albert Sek and James Stamos, as well as those serving on graduate student council committees for their

phenomenal job in fostering our community via numerous professional development, volunteer opportunities, and social events. We are continuing to offer the following virtual opportunities for graduate students:

- Hone your presentation skills and receive peer feedback on your research through the **Graduate student seminar series (GS3)** at the time of GSC monthly meetings.
- Further your professional development via **"Academic Journeys and Building Networks"** and **"PhD's in the Real World"**.
- Engage in the graduate community with other NIH grad students at **GSC monthly meetings** and **GSC organized social events**.

There are many ways to stay (virtually) socially connected to our community while physically distancing through the **GS_Underground Google Group**, **Facebook page**, and **Instagram**, as well as a **NEW Slack group** with channels for discussion.

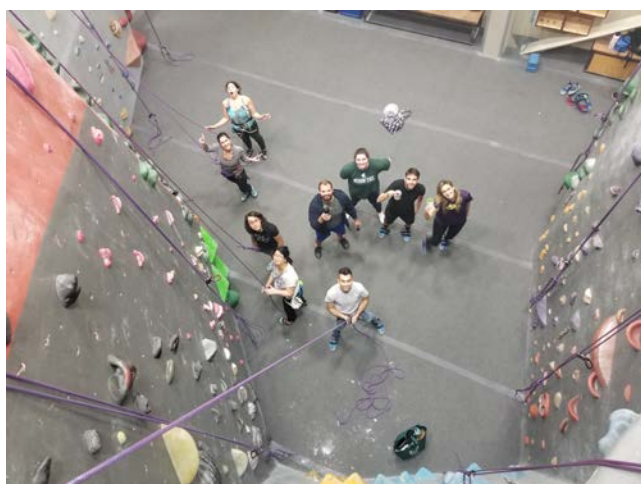
While we are disappointed that we won't be able to welcome new students as GSC has done in the past, we are still very eager to meet all graduate students (online for now). We hope that you will reach out to us on an individual basis to learn more about grad student life, ask questions and get involved with our graduate student community at NIH.

Stay resilient my fellows,
Your 2020 GSC co-chairs
Kat Daly and Katelyn McCann

GSCcochair@mail.nih.gov

The **Graduate Student Council (GSC)** was formed in 2001 with the goal of facilitating the intellectual, social, and living needs of graduate students conducting research at the NIH. As such, the council organizes regular events through eight committees and liaisons. We are always looking for talented graduate students to help with these committees – if you would like to get more involved with any of the following initiatives, please contact the Graduate Student Council Co-Chairs at GSCcochair@mail.nih.gov. Read on to learn more about our exciting work!

The GSC is still looking to fill some specific positions (see below) but please reach out if you have interest in any committee. It's a lot of fun and a great resume booster



Post-symposium HH

Community Service/Mentoring/Outreach Committee – This committee organizes events for graduate students to contribute to the community and to advance their personal and professional development. The committee organized volunteer events to assemble boxes of food for those in need (**Manna Food Bank**), prepared treats for patients at the **Children's Inn**, and publicized **blood drives**. Through collaborations with the **Prince George's County Project Lead the Way**, we provide opportunities for graduate students to mentor aspiring biomedical scientists.

Lastly, this committee has organized regular events to discuss professional development, including a career seminar series known as **PhDs in the Real World** and the **Academic Journeys and Building Networks**, which is a great series to hear directly from current NIH PIs (early and well established) about their academic career paths. Recently, we hosted Dr. Jagan R. Muppidi (NCI) and Dr. Katrin D. Mayer-Barber (NIAID) and it was great learning their different career paths. Graduate students who have attended these events have not only enjoyed them, but also found them to be remarkably helpful in their personal and professional development.

Foundation for Advanced Education in the Sciences (FAES) Liaison – FAES provides educational and professional services in addition to fostering a collegial environment for the NIH scientific community. As such, FAES provides graduate students with educational opportunities and health insurance. In addition, FAES provides us with the Graduate Student Lounge (Building 10, Room 4-3330), a unique space for graduate students to meet, study, and conduct events specific to graduate students. The FAES liaison of the GSC provides a critical voice for graduate students in the design and implementation of FAES initiatives.

Graduate Student Seminar Series (GS3) – This series is an excellent opportunity for graduate students to practice their presentation skills in a relaxed setting and to receive feedback on your presentation skills and research. Graduate Student Seminars are held on the last Tuesday of every month, from 5-5:30pm. We recently had an excellent presentation by Daniel Bronder on chromosome instability in ovarian cancer as well as an impressive virtual presentation given by Justin Grey on metastatic outgrowth of tumor cells. Be sure to tune into the next seminar series and if you'd like to **sign up to present and get feedback on your presentation**, please contact James Stamos at james.stamos@nih.gov.

Upcoming GS3:

May 26	Ashley Pitt
June 30	Marya Sabir
Aug 25	Chad Coomer
Sept 29	Emily Phung
Nov 17	Jorge Romo Tena

Spots still available for July 28, Oct 27, and Dec 15!

Public Relations Committee –The Public Relations Committee helps in promoting opportunities available to graduate students. These fall into three key efforts: 1) publication of the quarterly **GSChronicles, the official newsletter of the NIH Graduate Student Community**; 2) publication of the **Graduate Student Newsletter**; and 3) maintenance of the social media accounts for the Graduate Student Community, including the **Facebook, Google, and Instagram accounts**. The public relations committee is always looking for new ideas, as well as new writers, for the GSChronicles. Serving in this capacity is an excellent opportunity for graduate students to hone their writing skills and may be useful for professional development.

Social Committee * More members needed* – The Social Committee organizes events to build camaraderie and to promote networking among graduate students at the NIH. In the past few months, the Social Committee has organized the excellent post-symposium social hour back in February and some awesome rock-climbing events. The Social Committee has worked with postdoctoral and postbaccalaureate fellows as well to organize joint events such as social hours and game nights. Looking forward, during this troubling new lifestyle we are dealt, the social committee and the GSC are continuously brainstorming new ideas to keep the graduate student community connected. **Recently, we have developed a Slack group and other social groups to keep posted on upcoming virtual social events to stay engaged with your fellow fellows!**

<https://app.slack.com/client/T010UAXBK5H/C0115QW10HW>

Fellow's Committee Liaison – ****NEW LIASON NEEDED**** The liaison to the Fellows Committee builds on our successful relationship with the postdoctoral community. As such, the liaison helps organize social and professional events with postdocs. In the past few months, this has included graduate student involvement with the visiting fellows' social hours.

Postbac Liaison – The liaison to the Postbaccalaureate Committee works to deepen our relationship with the postbaccalaureate community at NIH. As such, the liaison has helped organized joint social events such as game nights and social hours.

OxCam Liaison – The liaison to the Oxford-Cambridge Program furthers our relationship with this unique graduate program. As such, the liaison has helped secure attendance for NIH Graduate Students at the monthly OxCam clinical case conferences. This conference helps bridge the gap between basic and translational science and has been well-received. Stay tuned for all upcoming clinical case conferences!

Check out our website: www.training.nih.gov/gsc

and be sure to stay connected with all of the
social platforms as well!

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Want to contribute?

Send your art, writing,
publications, awards, and
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